Electromagnetic Spectrum

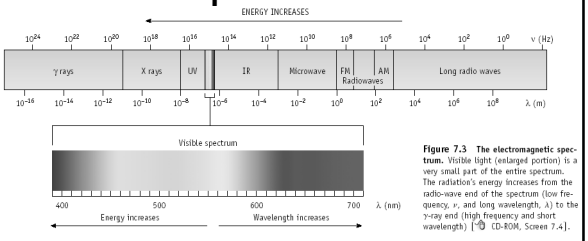
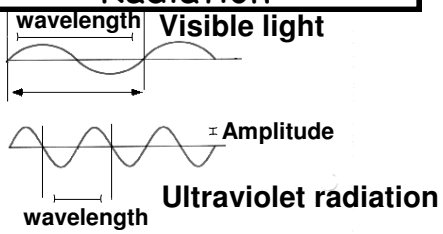


Figure 7.3 The electromagnetic spectrum. Visible light (enlarged portion) is a very small part of the entire spectrum. The radiation's energy increases from the radio-wave end of the spectrum (low frequency, ν, and long wavelength, λ) to the γ-ray end (high frequency and short wavelength) [CD-ROM, Screen 7.4].

In increasing energy, ROY G BIV

Electromagnetic Radiation



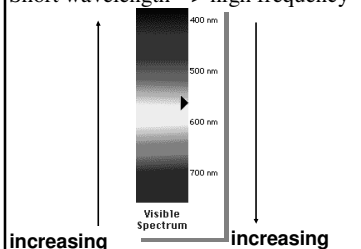
Electromagnetic Radiation

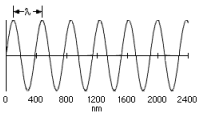
- Waves have a frequency
- Use the Greek letter "nu", ν, for frequency, and units are "cycles per sec"
- All radiation: $\lambda \cdot \nu = c$
  where c = velocity of light = 3.00×10^8 m/sec

Electromagnetic Spectrum

Long wavelength --> small frequency

Short wavelength --> high frequency



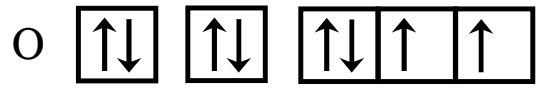


increasing frequency

increasing wavelength

Locating Electrons

❖***Orbital Diagrams***: Diagrams showing location and spin of individual electrons



❖***Electron Configurations***: Summary of total electrons in an orbital type

❖$1s^2\ 2s^2\ 2p^4$

16
S
32.066

Notation

- **Longhand Configuration**

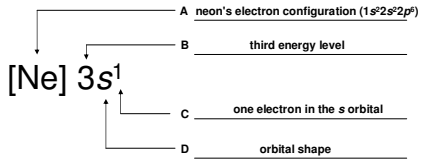
S 16e- $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$

Core Electrons — Valence Electrons

- **Shorthand Configuration**

S 16e- [Ne] $3s^2\ 3p^4$

Shorthand Configuration



Na = $[1s^2 2s^2 2p^6]\ 3s^1$ electron configuration